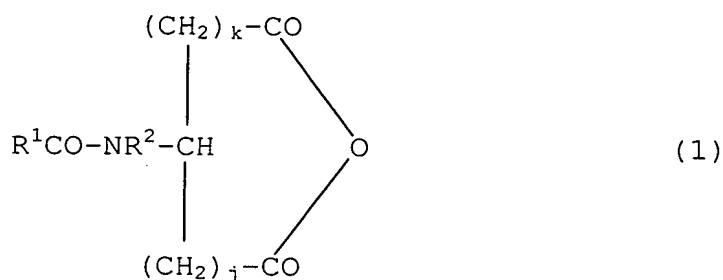


## CLAIMS

1. A method of producing an acyl group-containing composition comprising a step of reacting a long chain N-acyl acidic amino acid anhydride represented by the following formula (1):

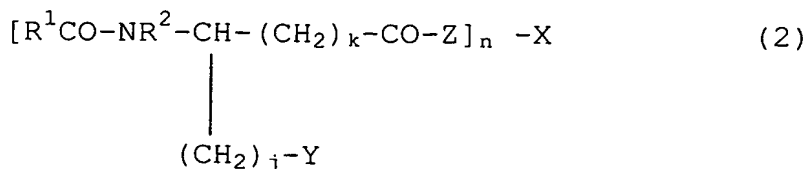
[Formula 1]



wherein  $\text{R}^1\text{CO}$  represents a long chain acyl group derived from a saturated or unsaturated fatty acid with 2 to 20 carbon atoms;  $\text{R}^2$  is hydrogen or a lower alkyl group with 1 to 3 carbon atoms which is optionally substituted with a hydroxyl or carboxyl group;  $j, k$  are independently any of 0, 1 and 2 and are not 0 at the same time, with one or more compounds having, per molecule,  $m$  functional groups of one kind or more selected from the group consisting of hydroxyl, amino and thiol groups in an aqueous solvent and/or a mixed solvent of water and an organic solvent, which is defined as reaction step,

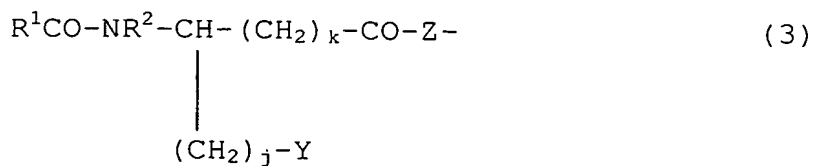
wherein the acyl group-containing composition comprises at least one acyl compound represented by the following general formula (2):

[Formula 2]



wherein  $R^1CO$ ,  $R^2$ , and  $j$ ,  $k$  each represent the same as those defined in the above formula (1);  $n$  ( $n$  is an integer of 2 to 20, including 2 and 20)  $Z$ s are bonding portions to which  $m$  ( $m \geq n$ ) functional groups of one kind or more selected from the group consisting of hydroxyl, amino and thiol groups substituted on  $X$  bind and which are selected independently from the group consisting of  $-O-$ ,  $-NR^3-$  ( $R^3$  is hydrogen, or an alkyl, an alkenyl, an aryl or an alkylaryl group with 1 to 10 carbon atoms) and  $-S-$ ;  $X$  is a spacer of a straight, branched or cyclic hydrocarbon chain of molecular weight of 1,000,000 or less which optionally has substituents other than hydroxyl, amino and thiol groups and contains or does not contain an aromatic hydrocarbon;  $n$  substituents represented by the following general formula (3):

[Formula 3]



wherein reference characters each represent the same as those defined in the above formula (2), which are attached to X via Z are independent of each other; and Y represents a carboxyl group or the salt thereof.

2. The method according to claim 2, wherein in the general formula (2), X is a spacer of a straight, branched or cyclic hydrocarbon chain with 1 to 40 carbon atoms which optionally has substituents other than hydroxyl, amino and thiol groups and contains or does not contain an aromatic hydrocarbon.

3. The method according to claim 1 or 2, wherein in said reaction step, the molar ratio of the total of the functional groups contained in the one or more compounds having, per molecule, m functional groups of one kind or more selected from the group consisting of hydroxyl, amino and thiol groups to the long chain N-acyl acidic amino acid anhydride represented by the formula (1) is 0.5 to 1.4 and the pH of the reaction solution is kept at 4 to 14 at the time of reaction.

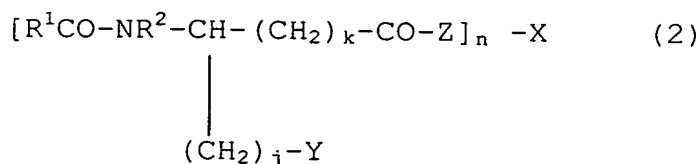
4. The method according to any one of claims 1 to 3, further comprising, as step(s) carried out after said reaction step, either one or both of (i) a step of separating the reaction solution derived from said reaction step into two layers, an organic layer and a water layer, by adjusting the pH of the reaction solution to 1 to 6 using a mineral acid to obtain an organic layer which contains the acyl group-containing

composition, which is defined as an acid-precipitation and layer-separation step and (ii) a step of separating, at 35°C to 80°C, the mixture of the acyl group-containing composition, which contains water-soluble impurities such as inorganic salts, and the medium, which substantially contains water and tertiary butanol as main ingredients, into a water layer and an organic layer containing the acyl group-containing composition to remove impurities in the acyl group-containing composition, which is defined as a washing step.

5. The method according to any one of claims 1 to 4, wherein after said reaction step, or after said acid-precipitation and layer-separation step or washing step, the organic solvent is distilled off from the organic layer, which contains the acyl group-containing composition, using a spray evaporator in which a mixed solution is allowed to take the form of a vapor-liquid mixed phase and is sprayed within the evaporator to evaporate the solvent.

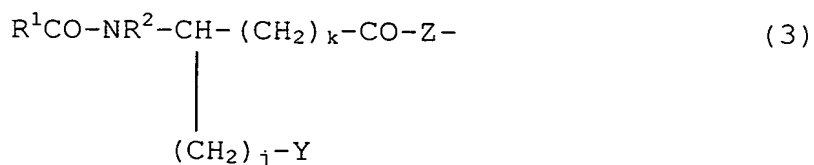
6. An acyl group-containing composition comprising at least one acyl compound represented by the following formula (2):

[Formula 2]



wherein  $R^1CO$  represents a long chain acyl group derived from a saturated or unsaturated fatty acid with 2 to 20 carbon atoms;  $R^2$  is hydrogen or a lower alkyl group with 1 to 3 carbon atoms which is optionally substituted with a hydroxyl or carboxyl group;  $j, k$  are independently any of 0, 1 and 2 and are not 0 at the same time;  $n$  ( $n$  is an integer of 2 to 20, including 2 and 20)  $Z$ s are bonding portions to which  $m$  ( $m \geq n$ ) functional groups of one kind or more selected from the group consisting of hydroxyl, amino and thiol groups substituted on  $X$  bind and which are selected independently from the group consisting of  $-O-$ ,  $-NR^3-$  ( $R^3$  is hydrogen, or an alkyl, an alkenyl, an aryl or an alkylaryl group with 1 to 10 carbon atoms) and  $-S-$ ;  $X$  is a spacer of a straight, branched or cyclic hydrocarbon chain of molecular weight of 1,000,000 or less which optionally has substituents other than hydroxyl, amino and thiol groups and contains or does not contain an aromatic hydrocarbon;  $n$  substituents represented by the following general formula (3):

[Formula 3]



wherein reference characters each represent the same as those defined in the above formula (2),

which are attached to X via Z are independent of each other; and Y represents a carboxyl group or the salt thereof, wherein the content of the acyl compound in the composition is 70% by weight or more, the content of free fatty acid is 3% by weight or less, and the content of a compound whose molecular weight is smaller than that of the acyl compound by 18 is 5% or less in terms of its area ratio to the acyl compound which is obtained by the analysis of liquid chromatography using a detector at 205 nm.

7. The composition according to claim 6, comprising 0.5 to 30% by weight of a long chain N-acyl acidic amino acid or a salt thereof.

8. The composition according to claim 6 or 7, wherein in the general formula (2), X is a spacer of a straight, branched or cyclic hydrocarbon chain with 1 to 40 carbon atoms which optionally has substituents other than hydroxyl, amino and thiol groups and contains or does not contain an aromatic hydrocarbon.

9. The composition according to any one of claims 6 to 8, wherein in the general formula (2),  $R^1CO$  is a long chain acyl group derived from a saturated or unsaturated fatty acid with 8 to 20 carbon atoms.

10. The composition according to any one of claims 6 to 9, wherein in the general formula (2), X has at least one group independently selected from the group consisting of carboxyl, sulfonic acid, sulfate ester and phosphate ester groups and the salts thereof.

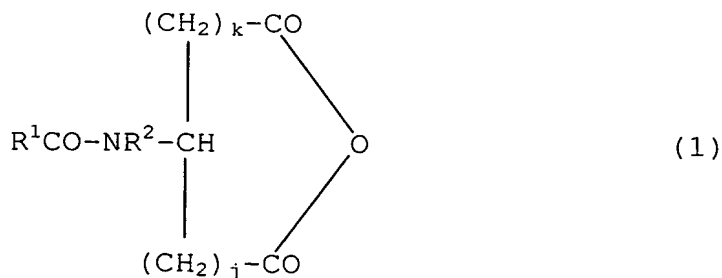
11. The composition according to any one of claims 6 to 10, comprising 0.2 to 1.5 equivalent of basic substance, as a counter ion, per 1 equivalent of dissociated groups in said acyl group-containing compound.

12. The composition according to any one of claims 6 to 11, wherein the transmittances at 430 nm and 550 nm are both 90% or more when said acyl group-containing composition is formed into an aqueous solution having a solids content of 20% by weight and a pH of 10.

13. The composition according to claim 10 or 11, further comprising other surfactant(s).

14. The composition according to any one of claims 6 to 13, comprising at least one acyl compound represented by the general formula (2) which is produced through a step of reacting a long chain N-acyl acidic amino acid anhydride represented by the following formula (1):

[Formula 1]



wherein reference characters represent the same as

those defined above, with one or more compounds having, per molecule, m functional groups of one kind or more selected from the group consisting of hydroxyl, amino and thiol groups in water and/or a mixed solvent of water and an organic solvent, which is defined as reaction step.

15. The composition according to claim 14, wherein the one or more compounds having, per molecule, m functional groups of one kind or more selected from the group consisting of hydroxyl, amino and thiol groups independently have, per molecule, at least one group, other than hydroxyl, amino and thiol groups, selected from the group consisting of carboxyl, sulfonic acid, sulfate ester and phosphate ester groups and the salts thereof.

16. The composition according to claim 14 or 15, wherein the composition is produced by carrying out, after said reaction step, either one or both of (i) a step of separating the reaction solution derived from said reaction step into two layers, an organic layer and a water layer, by adjusting the pH of the reaction solution to 1 to 6 using a mineral acid to obtain an organic layer containing the acyl group-containing composition, which is defined as an acid-precipitation and layer-separation step and (ii) a step of separating, at 35°C to 80°C, the mixture of the acyl group-containing composition, which contains water-soluble impurities such as inorganic salts, and the



medium, which substantially contains water and tertiary butanol as main ingredients, into a water layer and an organic layer containing the acyl group-containing composition to remove impurities in the acyl group-containing composition, which is defined as a washing step.

17. The composition according to any one of claims 14 to 16, wherein the composition is produced by distilling off the organic solvent, after said reaction step, or after said acid-precipitation and layer-separation step or washing step, from the organic layer which contains the acyl group-containing composition using a spray evaporator in which a mixed solution is allowed to take the form of a vapor-liquid mixed phase and is sprayed within the evaporator to evaporate the solvent.

18. A composition in the form of a liquid, a solid, a gel, a paste or a mist, comprising one or more of the acyl group-comprising compositions according to any one of claims 6 to 17.

19. A cosmetic composition in the form of a liquid, a solid, a gel, a paste or a mist, comprising one or more of the acyl group-containing compositions according to any one of claims 6 to 17.

20. The cosmetic composition according to claim 19, further comprising one or more polyhydroxyl compounds.

21. The cosmetic composition according to claim

20, wherein the content of polyhydroxyl compounds in the above described cosmetic composition is 0.1 to 60% by weight and the weight ratio of the content of the acyl group-containing compositions to the content of the polyhydroxyl compounds in said cosmetic composition is 10/1 to 1/100.

22. The cosmetic composition according to claim 20 or 21, further comprising one or more oil ingredients and being in the form of a gel.

23. A gelatinous composition comprising one kind or more of the acyl group-containing compositions according to any one of claims 6 to 17, one or more polyhydroxyl compounds and one or more oil ingredients, wherein the water content in the gelatinous composition is 50% by weight or less and the composition of the gelatinous composition is such that 1) the total amount of the acyl group-containing compositions is 0.1 to 40% by weight, 2) the total amount of the polyhydroxyl compounds is 1 to 60% by weight, and 3) the total amount of the oil ingredients is 1 to 95% by weight.

24. The gelatinous composition according to claim 23, wherein the difference in refractive index at 20°C between the water layer containing the acyl group-containing composition(s), the polyhydroxyl compound(s) and water, and the oil layer containing the oil ingredients, in the gelatinous composition is  $\pm 0.05$  or less.

25. The gelatinous composition according to claim

23 or 24, wherein its viscosity at 25°C is 1,000 to 200,000 mPa·s.

26. Use of the gelatinous composition according to any one of claims 23 to 25 for cleansing agents.

27. A cosmetic composition, prepared by emulsifying the gelatinous composition according to any one of claims 23 to 25.

28. A dispersant composition which comprises one or more of the acyl group-containing compositions according to any one of claims 6 to 17 and is in the form of a liquid, a solid, a gel, a paste or a mist.